

# **Advancing Circularity in e-waste in Pacific Island Countries**

**Presented by  
Alice Leney**

**Programme Manager**

**Kiribati Solid Waste Management Programme**

# Circular Economy: Closing the Loop on e-waste

- Materials are mined, manufactured, bought together in complex products in large factories;
- A complex trading system spreads the products across millions of consumers;
- The end-of-life products must be collected together to be processed at scale to recover valuable materials.



# Circular Economy Elements

- **Short Cycle**

Repair a product because of simple failure; recover spare parts that can be used to repair other items.

- **Long Cycle**

Recovery of precious scrap metals from e-waste at processing plants for remanufacturing into new products.

# What is PIC e-waste?

- e-waste forms an increasing part of our waste stream in PICs: anything that uses electricity.
- e-waste can be defined as a wide variety of consumer goods & equipment , typically:
- Consumer electrical goods, such as laptops and phones;
- Household goods: washing machines, A/C, fridges, TVs;
- Power tools and equipment with electric motors and batteries;
- Commercial items: printers, servers, telecoms gear.



# Three Main Elements for PICs

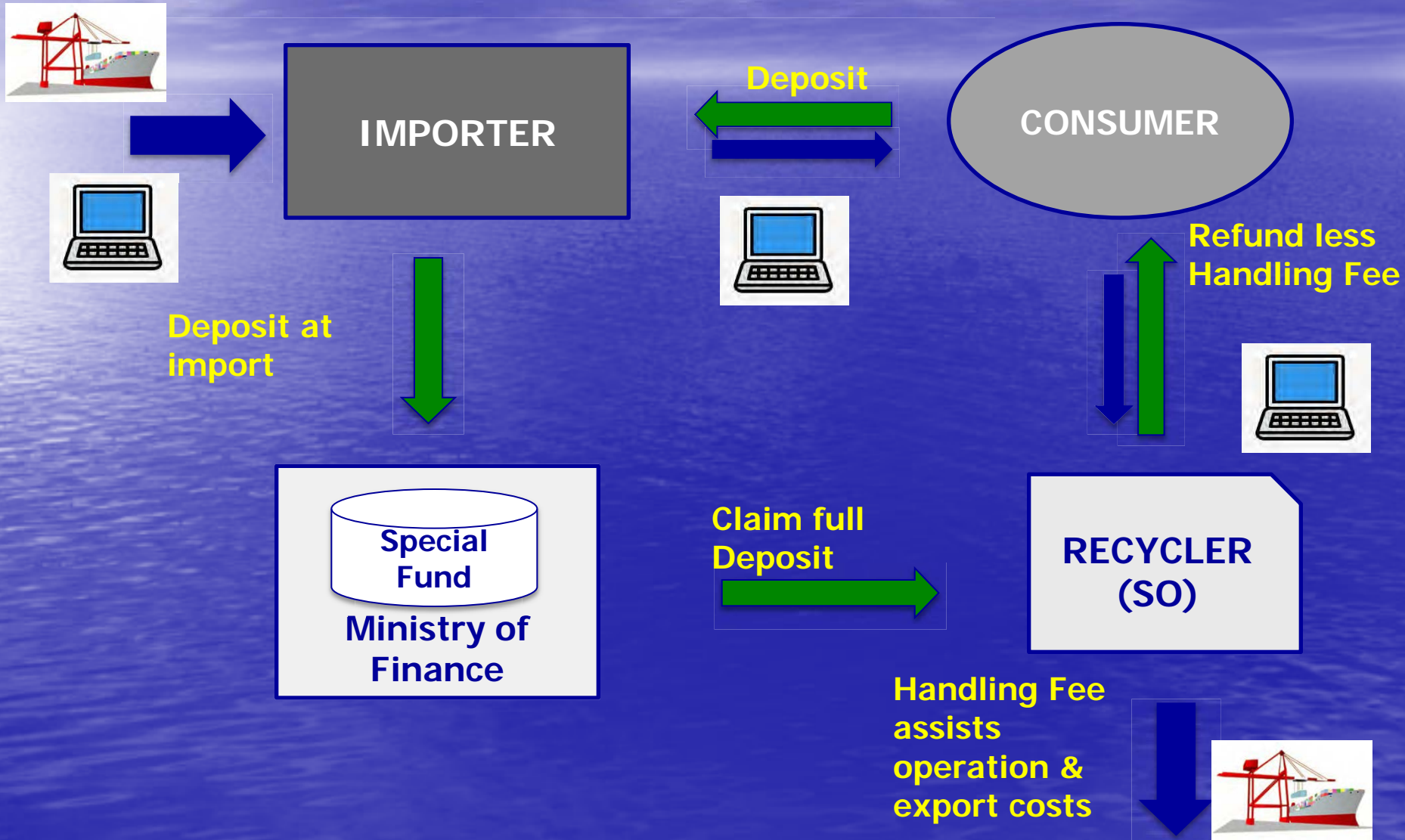
- **#1: Legislative framework:** assist the creation of the Circular Economy
- **#2: Commercial operations:** how do we facilitate this in a SIDS environment? How do funds flow?
- **#3: Communications to public:** people's participation is essential; how do we do get them involved?

# #1: Legislation

- Two main methods: Government controlled Revolving Funds, or industry Managing Agency models;
- For PICs, the 'industry' model is not really applicable: business is small and fragmented.
- The Revolving Fund model is viable and fairly straight forward, can often follow similar local practise. Will involve the Ministry of Finance



# Deposit & Refund System



# Kiribati proposals: Deposits Order

## Schedule (clause 4)

Item	Column 1 - Class of Material	Column 2 - Scale of Deposit
1	Any beverage container made of PET	12c per container
2	Any pellet of PET that can be used to manufacture beverage containers	12c per pellet
3	Any cooking oil container made of PET	12c per container
4	Any beverage container made of aluminium	12c per container
5	Any type of lead-acid battery	\$10 per battery
6	Motor vehicles for the transport of ten or more, but less than 20, persons, including the driver	\$1,000
7	Motor cars and other motor vehicles principally designed for the transport of persons (other than those of heading 87.02), including station wagons	\$1,000
8	Motor vehicles for the transport of goods g.v.w. not exceeding 5 tonnes	\$1,000
9.	Laptop computers	\$42
10.	Cell phones	\$12



# Kiribati Proposals: Refund Payments

## Schedule (regulation 10)

Item	Column 1 – Waste Material	Column 2 – Refund
1	Any beverage container made of PET	\$1 per ten containers
2	Any cooking oil container made of PET	\$1 per ten containers
3	Any beverage container made of aluminium	\$1 per ten containers
4	Any type of lead-acid battery	\$10 per battery
5	Motor vehicles for the transport of ten or more, but less than 20, persons, including the driver	\$900 per vehicle
6	Motor cars and other motor vehicles principally designed for the transport of persons (other than those of heading 87.02), including station wagons	\$900 per vehicle
7	Motor vehicles for the transport of goods g.v.w. not exceeding 5 tonnes	\$900 per vehicle
8.	Laptop computers	\$40
9.	Cell phones	\$10

## #2: Commercial Operations: Re-use and export

First level is REUSE:

Is the Item still functional?

Can it be Repaired?

Can we recover usable parts? Cables, batteries, etc.

Does it need dismantling before packing to export?



# Testing Equipment & Parts Recovery



# Reuse of Computers and data containing e-waste

- The data on the computer / phone must be removed, the computer 'cleaned' out before re-sale.
- Companies in developed nations provide this service for old laptops etc.
- Need some controls on privacy.



# Reuse: Cables and parts



# Dismantling e-Waste





# Stripping Out Equipment









# Commercial Categories of Value

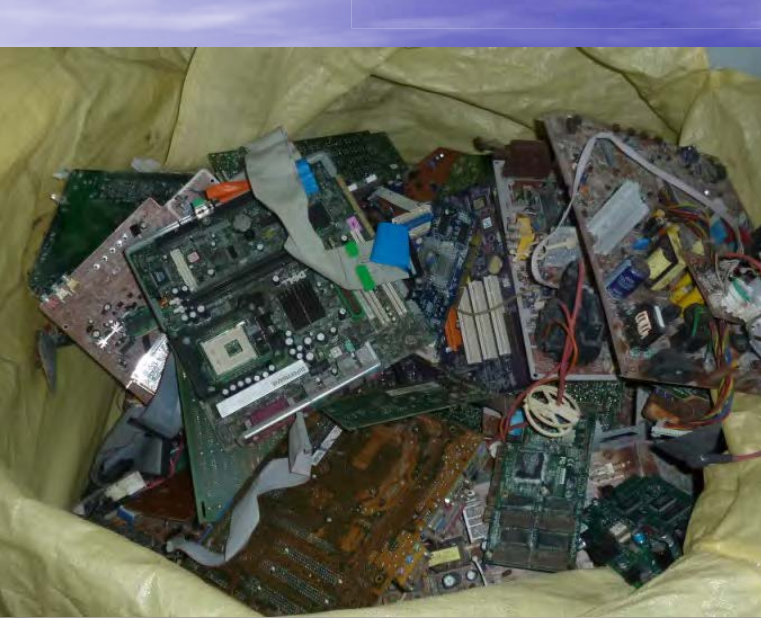


# Charging for Disposal





# Exporting e-waste





Outturn Report				
	Kilo		Aust \$	
Description	Weight	Per Kg	Payback	
CD Roms	182	\$0.20	\$ 36.40	
L/G PC Boards	661	\$0.50	\$ 330.50	
L/G PC Boards	47	\$0.50	\$ 23.50	
L/GPC Boards	314	\$0.50	\$ 157.00	
L/G PC Boards	339	\$0.50	\$ 169.50	
L/G PC Boards	428	\$0.50	\$ 214.00	
Mother Boards and Sound Cards	100	\$3.50	\$ 350.00	
Mother Boards and Sound Cards	167	\$3.50	\$ 584.50	
Power Supply Cable Removed	134	\$0.20	\$ 26.80	
Switch Gear Key Boards	86	\$0.10	\$ 8.60	
Swith Gear	162	\$0.10	\$ 16.20	
Switch Gear	174	\$0.10	\$ 17.40	
FE Aluminium Extrusion	38	\$1.00	\$ 38.00	
3 PC Boards	153	\$1.50	\$ 229.50	
3 PC Boards	255	\$1.50	\$ 382.50	
3 PC Boards	261	\$1.50	\$ 391.50	
PVC LG	371	\$2.75	\$ 1,020.25	
PVC LG	347	\$2.75	\$ 954.25	
PVC LG	192	\$2.75	\$ 528.00	
PVC With Plugs	159	\$2.00	\$ 318.00	
PVC With Plugs	48	\$2.00	\$ 96.00	
Sub Total			\$ 5,892.40	
Less Clearance and Del			<del>-\$ 2,877.77</del>	
Grand Total			\$ 3,014.63	

Returns from  
Kiribati  
Exports to  
Australia in  
2023



# Commercial Revenue Streams

- **Handling Fees** if a deposit refund scheme is in place;
- **Local sale of items:** must have the capacity to sort store and organise items for re-sale to the public;
- **Disposal Fees:** especially from offices who need to get rid of old equipment;
- **Export sales:** materials must be sorted and packed correctly, with Basel Permit.

# What happens to the e-waste?

- The materials must be exported under Basel Convention and International Maritime Organisation (IMO) Dangerous Goods (DG) packing codes.
- Materials go into factories that shred the e-waste, then treat it with, physical, chemical and heat processes to recover valuable materials to go back to electronic manufacturers.



# #3: Communicating to the People

Use the Phone! Everyone has one! And it will become e-waste.....

- **TEXT messages:** can be sent out in bulk by local phone company;
- **Businesses that sell Phones:** provide a hand-out sheet to go with each new phone about handing in dead ones;
- **Phone Credit sellers:** make signs that give QR code or similar for recycle options

# Phones connect to e-waste

- For Outer Islands, the ownership of a phone almost guarantees the ownership of a solar system, which has a battery and electronics.
- Urban households who have smartphone may well have other electrical equipment, flat screen TV for example.



# E-Day Collections





# Cooks Islands E-Day





# Lots of Data and Hard Work











# E-Days: Pros and Cons

## Pros:

- Can collect a lot of e-waste;
- Can greatly raise profile of the e-waste problem;

## Cons:

- Need a lot of volunteers;
- Lots of organising and publicity needed for a single day;
- The amount of e-waste collected can overwhelm the collection & processing system;
- Exporting it 'as collected' will be very expensive.



# Key Points

- Dramatic increase in imports of electrical equipment over last 20 years;
- Many items are getting smaller and denser – this is good;
- It will usually take a long time in a SID to fill a shipping container with e-waste;
- Shipping costs are high;
- Labour costs may be low enough to make stripping out some items worth the effort;
- Collection is often the hardest part.

# Essential Elements for Success

- Enabling Legislative or policy environment;
- Commercial partner who will undertake the local processing work: a Public Private Partnership of some sort;
- A Materials Recovery Facility so that e-waste is just one part of the recyclable waste stream;
- Ability to Communicate with the public: who pays for that? And what methods to be used?





# Key Challenges

- Political agreement to change or create regulations to include e-waste;
- Financial Sustainability of e-waste collection and processing;
- Contractual arrangements with commercial partners, PPP;
- Materials Recovery Facility for public interaction and commercial operations





***Kiribati te bobotoo!!***

Thank you for  
your time